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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/587,151	02/20/2007	Elio Poggiagliolmi	66455-275-7	4994
25269	7590	10/17/2008		
DYKEMA GOSSETT PLLC			EXAMINER	
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WASHINGTON, DC 20005			ART UNIT	PAPER NUMBER
			3671	
			MAIL DATE	DELIVERY MODE
			10/17/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/587,151	POGGIAGLIOLMI ET AL.	
	Examiner	Art Unit	
	JOAN D. MISA	3671	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 12 June 2008.
 2a) This action is **FINAL**. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 24-29 and 31-56 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 24-29 and 31-56 is/are rejected.
 7) Claim(s) _____ is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ . |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____. | 6) <input type="checkbox"/> Other: _____ . |

DETAILED ACTION

Claim Objections

Claims 36 and 46 are objected to because the phrase “an amplitude and/or frequency and/or phase” contains “and/or” which render the claims indefinite. For the purpose of this examination, the examiner considers the phrase to read as “at least one of an amplitude, frequency, and phase”. Appropriate correction is required.

Claim 49 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim (claim 36). Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 24, 27-29, and 31-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pellenc (FR 2,639,176), with reference to a machine translation, in view of Zehavi et al. (5,473,875), hereafter Zehavi '875.

In re claim 24, given the structure of a vibrating device for removing fruit from a plant, the following method step would inherently be performed when using the device disclosed by Pellenc: *connecting drive means (“verin alternatif” 38) to the plant to apply vibrations thereto, wherein the vibrations have a frequency*, as disclosed in Figure 4 and page 1, lines 25-33 and page 8, lines 9-12 and 22-24. However, Pellenc fails to disclose wherein the frequency can be controlled, sweeping the frequency of the vibrations linearly or non-linearly from an initial sweep to a final sweep.

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Zehavi '875 teaches that "the range of frequencies through which the vibration units are optimally drawn is determined by the characteristics' of the tree being shaken... trees of a given type tend to exhibit natural resonance frequencies that vary only within a narrow band." (col.5, lines 25-30) Therefore to sufficiently locate the resonance frequency of a given tree, which results in the most efficient harvest when the tree is vibrated at this frequency, the control means (computer 54) vibrates the vibratory head at a varying or sweeping frequency (col.5, lines 10-34 and col.6, lines 13-14 and 19-20). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the control means of Pellenc to vibrate at a varying or sweeping frequency as taught by Zehavi '875, in order to sufficiently locate the resonance frequency of a given tree which results in the most efficient harvesting.

In re claims 27-28, the combination of Pellenc and Zehavi '875 further discloses on page 2, lines 13-21; page 8, lines 12-21; and Figure 6 of Pellenc, the method of claim 24:

- a. Per claim 27, *including measuring acceleration or displacement of the vibrations using at least one sensor ("des capteurs magnétiques" 49a & 49b);*
- b. Per claim 28, *further comprising the step of adjusting at least one of the frequency, phase, and amplitude of the vibrations in dependence on sensor measurement.*

In re claim 29, the combination further discloses the method of claim 24, *including manually adjusting at least one of the frequency, amplitude, and phase of the vibrations*, as suggested on page 10, lines 28-34 of Pellenc.

In re claims 31-34, Pellenc discloses the device of claim 24; however, Pellenc does not expressly disclose the following:

- a) Per claim 31, *wherein the initial sweep frequency is higher than the final sweep frequency;*
- b) Per claim 32, *wherein the initial sweep frequency is lower than the final sweep frequency;*

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- c) Per claim 33, *wherein the vibrations include a modulation component which has a much lower frequency than the sweep frequency; and*
- d) Per claim 34, *the step of limiting the range of frequencies of the vibrations by means of a band pass filter.*

However, given the fact of the issues known in the art as disclosed by the applicant, with the use of one single dominant frequency, the trees are prone to damage, often including substantial removal of leaves and/or twigs of the tree. It would have been obvious to vary the frequency of the vibration, according to the limitations of claims 31-34, depending on certain factors, such as the size of the tree or fruits, the time of the harvest, the ripeness of the fruits, etc., to prevent such damage to the tree and achieve high harvesting efficiency. Thus, the examiner considers that the electronic device that controls the servo valve of the device of Pellenc used to adjust the frequency and/or amplitude of the movement of the vibration head, inherently meets the limitations of claims 31-34.

In re claims 35, Pellenc discloses the method of claim 24, except for *the step of omitting frequencies from the vibrations which cause leaf detachment from the tree*. However, given that the applicant discloses that an issue with current mechanical shaking devices is that "mechanical shaking methods damage the trees and leads to the unwanted removal of leaves and small branches" (pg. 1, lines 20-21 & pg. 2, lines 2-6), it would have been obvious to one of ordinary skill in the art at the time the invention was made to omit applications of frequencies that cause leaf detachment from the tree from the vibrations since removal of leaves and small branches due to mechanical shaking methods are deemed unwanted.

Claims 25-26 and 36-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pellenc in view of Zehavi '875 in view of Zehavi et al. (2004/0079065), hereafter Zehavi '065.

In re claims 25, the combination of Pellenc and Zehavi '875 discloses the method of claim 24 above, except wherein the vibrations are substantially unidirectional. Zehavi '065 discloses a method inherent in a device for removing fruit from a plant, *wherein the vibrations are substantially unidirectional*,

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as disclosed on page 1, paragraph 009 and 013. According to Zehavi '065, the advantage of using a unidirectional force or vibration is that optimal harvesting results can be achieved and shaking-vibration harm to the mechanical device, to the vehicle, and to the driver can be prevented (Para. 009). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the vibratory head of the device of the combination to provide a unidirectional force between the reaction mass and clamping means, as taught by Zehavi '065, in order to achieve optimal harvesting result and prevent detrimental effects on the mechanical device, the vehicle, and the driver.

In re claims 26, the combination of Pellenc, Zehavi '875 and Zehavi '065 further discloses the method of claim 24 above, *wherein the vibrations are applied to the plant substantially normally to a longitudinal axis of the plant*, as disclosed in page 1, paragraph 013 and as shown in Figure 1 of Zehavi '065, wherein the shaking direction is along the x-axis and the longitudinal axis of the plant is the axis emerging from the paper.

In re claim 36, Pellenc discloses in Figure 4 a device for removing fruit from a plant comprising:

- a) *a vibratory head, as illustrated in Figure 4, having means ("la pince" 40 & 41) for clamping a fruit plant to apply vibrations to the plant, and means ("la servo-valve" 47) for controlling the vibratory head,*
- b) *the vibratory head further comprising at least one reaction mass ("verin alternatif" 38) which is vibratably driveable and connected to the clamping means (40 & 41) for relative movement therebetween to provide a unidirectional force transmittable between the reaction mass and the clamping means, and hence transmittable to the plant,*
- c) *wherein the vibrations have at least one of an amplitude, frequency, and phase which varies with time*, as disclosed in page 1, lines 25-33 and page 8, lines 9-12 and 22-24.

However, Pellenc fails to disclose that the vibratory head is controlled to vibrate at a frequency which sweeps linearly or non-linearly from an initial sweep frequency to a final sweep frequency. Zehavi '875 teaches that "the range of frequencies through which the vibration units are optimally drawn is

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determined by the characteristics' of the tree being shaken... trees of a given type tend to exhibit natural resonance frequencies that vary only within a narrow band." (col.5, lines 25-30) Therefore to sufficiently locate the resonance frequency of a given tree, which results in the most efficient harvest when the tree is vibrated at this frequency, the control means (computer 54) vibrates the vibratory head at a varying or sweeping frequency (col.5, lines 10-34 and col.6, lines 13-14 and 19-20). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the control means of Pellenc to vibrate at a varying or sweeping frequency as taught by Zehavi '875, in order to sufficiently locate the resonance frequency of a given tree which results in the most efficient harvesting.

Furthermore, the combination of Pellenc and Zehavi '875 fails to disclose that the vibratory head provides a unidirectional force transmittable between the reaction mass and the clamping means. Zehavi '065 discloses a device for removing fruit from a plant wherein the vibratory head (linear vibration generator 4) provides a *unidirectional force transmittable between the reaction mass and the clamping mean*, as suggested in the abstract, lines 9-10; page 1, paragraph 009; and page 5, paragraph 053 which corresponds with Figure 1. According to Zehavi '065, the advantage of using a unidirectional force or vibration is that optimal harvesting results can be achieved and shaking-vibration harm to the mechanical device, to the vehicle, and to the driver can be prevented (Para. 009). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the vibratory head of the device of the combination to provide a unidirectional force between the reaction mass and clamping means, as taught by Zehavi '065, in order to achieve optimal harvesting result and prevent detrimental effects on the mechanical device, the vehicle, and the driver.

In re claim 37, the combination of Pellenc, Zehavi '875, and Zehavi '065 further discloses the device of claim 36, *wherein the control means comprise electronic control means ("la servo-valve" 47 of Pellenc) which also controls at least one of the amplitude and phase of the vibrations*, as suggested on page 1, lines 25-33 and page 8, lines 7-13 of Pellenc.

In re claims 38-41, the combination further discloses:

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- a) Per claim 38, the device of claim 36, *wherein the or each reaction mass (38 of Pellenc comprises at least one of a hydraulic cylinder ("le corps" 38a) and piston ("la tige" 38b);*
- b) Per claim 39, the device of claim 38, *wherein the hydraulic piston (38b) and cylinder (38a) are driven by pressurized fluid which is selectively applied to chambers of the hydraulic cylinder (38a) by a valve (47), as disclosed on page 8, lines 9-12.*
- c) Per claim 40, the device of claim 38, *wherein the reaction mass (38) comprises a piston (38b).*
- d) Per claim 41, the device of claim 38, *wherein the reaction mass (38) comprises a cylinder (38a).*

In re claim 42 and 43, the combination discloses the device of claim 38 except *for two cylinders and two pistons, per claim 42, or more than two pistons and cylinders arranged orthogonally to one another for placement around a trunk or branch of the plant and drivable sequentially, per claim 43.*

However, Pellenc discloses the device of claim 38 having one cylinder (38a) and one piston (38b). This limitation simply amounts to adding the same device to an existing structure twice or more than twice. Specifically, the applicant merely describes multiple pistons and multiple cylinders already described in the singular. Accordingly, the examiner considers these two limitations to be duplication or multiplication of parts. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to duplicate or multiply the piston and cylinder of the device of Pellenc since it has been held that duplication or multiplication of the essential working parts of a device involves only routine skill in the art. MPEP 2144.04.

In re claims 44-45, the combination further discloses the device of claim 36,

- a) Per claim 44, *wherein the vibrations of the or each reaction mass are substantially unidirectional, as disclosed on page 1, paragraph 009 and 013 of Zehavi '065;*
- b) Per claim 45, *wherein the vibratory force is applied to the plant substantially normally to the longitudinal axis of the plant, as disclosed in page 1, paragraph 013 and as shown in*

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Figure 1 of Zehavi '065, wherein the shaking direction is along the x-axis and the longitudinal axis of the plant is the axis emerging from the paper.

In re claims 46-47, the combination further discloses on page 2, lines 13-21, page 8, lines 12-21, page 8-10, and Figure 6 of Pellenc, the device of claim 36:

- a) Per claim 46, *further comprising sensors ("des capteurs magnétiques" 49a & 49b) for measuring at least one of the acceleration, velocity, and displacement of the vibrations;*
- b) Per claim 47, *wherein at least one of the frequency, phase, and amplitude of the vibrations of the reaction mass are adjustable in dependence on the sensor information.*

In re claim 48, the combination further discloses the device of claim 36, *wherein the control means are manually adjustable*, as suggested on page 10, lines 28-34 of Pellenc.

In re claim 49, the combination discloses the device of claim 36, *wherein the frequency of the vibrations is swept linearly or non-linearly from an initial sweep frequency to a final sweep frequency* (as previously discussed in claim 36 above).

In re claims 50-53, the combination discloses the device of claim 36 or 49, but does not expressly disclose the following:

- a) Per claim 50, *wherein the initial sweep frequency is higher than the final sweep frequency;*
- b) Per claim 51, *wherein the initial sweep frequency is lower than the final sweep frequency;*
- c) Per claim 52, *wherein the vibrations include a modulation component which has a much lower frequency than the sweep frequency; and*
- d) Per claim 53, *wherein the frequency range is limited by a band pass filter.*

However, given the fact of the issues known in the art as disclosed by the applicant, with the use of one single dominant frequency, the trees are prone to damage, often including substantial removal of

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leaves and/or twigs of the tree. It would have been obvious to vary the frequency of the vibration, according to the limitations of claims 50-53, depending on certain factors, such as the size of the tree or fruits, the time of the harvest, the ripeness of the fruits, etc., to prevent such damage to the tree and achieve high harvesting efficiency. Thus, the examiner considers that the electronic device that controls the servo valve of the device of Pellenc used to adjust the frequency and/or amplitude of the movement of the vibration head, inherently meets the limitations of claims 50-53.

In re claim 54, the combination discloses the device of claim 36, except *wherein frequencies which cause leaf detachment from the tree are substantially omitted from the vibrations*. However, given that the applicant discloses that an issue with current mechanical shaking devices is that "mechanical shaking methods damage the trees and leads to the unwanted removal of leaves and small branches" (pg. 1, lines 20-21 & pg. 2, lines 2-6), it would have been obvious to one of ordinary skill in the art at the time the invention was made to omit applications of frequencies that cause leaf detachment from the tree from the vibrations since removal of leaves and small branches due to mechanical shaking methods are deemed unwanted.

Claims 55 and 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pellenc, Zehavi '875, and Zehavi '065, as applied to claim 38 above, and further in view of Podolsky et al. (WO 2004/006646).

In re claim 55, the combination of Pellenc, Zehavi '875, and Zehavi '065 discloses the device of claim 38 above, except wherein the vibratory head is mounted on carrying means with respect to which the vibratory head is independently movable. Podolsky et al. discloses a device for the orchard harvesting, *wherein the vibratory head is mounted on carrying means* (Fig. 3, rockers 17 & 19) *with respect to which the vibratory head is independently movable*, (Pg. 14, lines 15-17). The purpose of the housing (or vibratory head) being suspended on the frame via the rockers is to prevent vibration transmission to the body of the vehicle, as disclosed by Podolsky on page 8, lines 6-9. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify

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the device of Pellenc to include the carrying means of Podolsky et al. in order to prevent vibration transmission to the body of the vehicle.

In re claim 56, the combination of Pellenc, Zehavi '875, and Zehavi '065 discloses the device of claim 38 above, except *wherein the drive means utilizes electromagnetic or pneumatic force to oscillate the reaction mass*. However, since the applicant has not disclosed that having electromagnetic or pneumatic force to oscillate the reaction mass solves any stated problem or is for any particular purpose, and it appears that the device would perform equally well with the drive means using either of the forces, the examiner considers that it would have been obvious to one of ordinary skill in the art at the time the invention was made to have a drive means that utilizes electromagnetic or pneumatic force to oscillate the reaction mass as a matter of design choice, as further supported by Podolsky on page 9 lines 9-11.

Response to Arguments

Applicant's arguments with respect to claims 24-29 and 31-56 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOAN D. MISA whose telephone number is (571)270-3745. The examiner can normally be reached on Monday - Friday, 8:00am - 5:00pm, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Will can be reached on (571) 272-6998. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JDM 10/10/2008

/Thomas A Beach/

Primary Examiner, Art Unit 3671